WHAT IS CLAIMED IS:

1. An elongated intracorporeal optical instrument, comprising:

a. an elongated shaft having a longitudinal axis and proximal and distal portions having ends, an optical pathway configured for passing optical radiation, and an internal surface having a proximal portion and defining an internal chamber within the elongated shaft extending to the optical pathway;

b. an elongated optical fiber disposed at least in part within said internal chamber of said elongated shaft; and

c. a ferrule attached to said optical fiber and having a distal portion with a diameter and an outer surface, a proximal portion with a diameter and an outer surface, and configured to have a first position in which said ferrule is secured to the elongated shaft and a second position in which the ferrule is released from the elongated shaft and is free to rotate around said longitudinal axis.

2. The optical instrument of claim 1 wherein the ferrule is configured to be secured to the elongated shaft by a friction fit.

3. The optical instrument of claim 2, wherein said friction fit comprises contact between at least a portion of said ferrule outer surface and a portion of said elongated shaft inner surface.

4. The elongated intracorporeal optical instrument of claim 1, wherein said intracorporeal instrument comprises an optical guidewire.

5. The optical instrument of claim 2, wherein said ferrule distal outer surface comprises a surface selected from the group consisting of cylindrical surfaces, tapered surfaces, rounded surfaces, and combinations thereof.

6. The optical instrument of claim 1, wherein said ferrule diameters are each less than about 0.01 inch.

7. The optical instrument of claim 1, wherein said ferrule diameters are each less than about 0.006 inch.

8. The optical instrument of claim 1, wherein said ferrule proximal portion is configured to form an operable optical connection with another optical instrument.

9. The optical instrument of claim 1, wherein said ferrule proximal portion is configured to form an operable mechanical connection with another instrument.

10. An elongated intracorporeal optical instrument, comprising:

a. an elongated shaft having a longitudinal axis and proximal and distal portions having ends, an optical pathway in the distal portion configured for passing optical radiation, and an internal surface having a proximal portion and defining an internal chamber within the elongated shaft extending to the passage in the distal portion;

b. an elongated optical fiber disposed at least in part within the internal chamber of the elongated shaft; and

c. a ferrule attached to said optical fiber and having an outer surface comprising a distal portion with a diameter, a proximal portion with a diameter, at least said ferrule distal portion being disposed within said elongated shaft internal chamber,

and a circumferential feature configured to engage the elongated shaft effective to restrict longitudinal movement of the ferrule with respect to the elongated shaft without preventing rotation of the ferrule around a longitudinal axis.

11. The optical instrument of claim 10, wherein said circumferential feature comprises a channel.

12. The optical instrument of claim 10, wherein said ferrule outer surface comprises a surface selected from the group consisting of cylindrical surfaces, tapered surfaces, rounded surfaces, and combinations thereof.

13. The ferrule of claim 10, wherein said ferrule diameters are each less than about 0.01 inch.

14. The ferrule of claim 10, wherein said ferrule diameters are each less than about 0.006 inch.

15. The optical instrument of claim 10, wherein said ferrule proximal portion is configured to form an operable optical connection with another optical instrument.

16. The optical instrument of claim 10, wherein said ferrule proximal portion is configured to form an operable mechanical connection with another instrument.

17. A system comprising:

a. an optical instrument having an optical connector and a rotatable mechanical connector, and an optical guidewire, said optical guidewire comprising:

an elongated shaft having a longitudinal axis, a diameter and proximal and distal portions having ends, an optical pathway in the distal portion configured for

passing optical radiation, and an internal surface defining an internal chamber within the elongated shaft extending to the passage in the distal end;

an elongated optical fiber disposed at least in part within the internal chamber of the elongated shaft; and

a ferrule attached to said optical fiber having a diameter and a distal portion and configured to have a position in which the ferrule is free to rotate around said longitudinal axis with respect to the elongated shaft, said ferrule being configured to engage said optical connector effective to pass optical radiation between said optical fiber and said optical instrument, said ferrule further configured to engage said rotatable mechanical connector effective that said ferrule rotates when engaged to said mechanical connector while said mechanical connector rotates.

18. The system of claim 17, wherein said ferrule is rotatably engaged with said elongated shaft, effective that at least a distal portion of said ferrule is disposed within said internal chamber of said elongated shaft and is free to rotate around said longitudinal axis.

19. The system of claim 17, wherein said ferrule is releasably engaged with said elongated shaft, wherein said ferrule is configured to be free to rotate around said longitudinal axis with respect to the elongated shaft when said ferrule is retracted from said internal chamber.

20. A method for rotating an optical fiber attached to a ferrule and disposed within an elongated shaft having an internal chamber, the ferrule having a longitudinal axis and a surface configured to fit within said internal chamber and configured to have a position in which the ferrule is free to rotate around said longitudinal axis, the steps

comprising engaging the ferrule with an optical interface, engaging the ferrule with a mechanical interface, and rotating the mechanical interface effective to rotate the ferrule and the optical fiber.

21. The method of claim 20, wherein said ferrule is configured to form a friction fit in contact with said elongated shaft, further comprising the step of retracting the ferrule from contact with the elongated shaft, effective that said ferrule is free to rotate around the longitudinal axis.

22. The method of claim 20, wherein said ferrule is configured to rotate freely within said internal chamber.

23. A sterile interface having an optical fiber effective to carry optical radiation, a distal portion and a proximal portion, said distal portion being configured to engage a ferrule, and said proximal portion being configured to engage a peripheral instrument.

24. The sterile interface of claim 23, further comprising a sterile shield.

25. A sterile interface for quickly connecting and disconnecting an optical guidewire to an instrument, said sterile interface comprising an plurality of parts, each part comprising a bore therethrough, said bores together defining a passage, at least a portion of said passage enclosing an optical fiber, at least a portion of said the passage being configured to receive and engage said optical guidewire.

26. An instrument for directly or indirectly connecting with an optical guidewire, comprising:

a connector having a docking portion and an optical path configured to transmit optical radiation to instruments connected to said docking portion;

an optical device configured to direct optical radiation passing along said optical path; and

a mechanical drive configured to rotate said docking portion.

27. The instrument of claim 26, wherein said optical device comprises an optical detector.

28. The instrument of claim 26, wherein said optical device comprises a source of optical radiation.

29. A ferrule for use with an optical instrument, comprising a passage configured to pass optical radiation and a distal portion with an outer surface configured to engage a shaft with a friction fit.

30. A ferrule for use with an optical instrument, comprising a passage configured to pass optical radiation and a distal portion with an outer surface configured to rotate within a shaft.